

REMARKS

Applicant thanks the Examiner for the time and care taken to consider this Application. Claims 17-19, 21-25, and 33-45 are pending. Support for new claims 33-45 can be found in original claims 1-32 and in the specification at page 1, line 18 to page 2, line 7 (automobile body parts, automobile fascia, and automobile body panels); at page 7, lines 1-8 (temperature); and at page 7, line 22 to page 8, line 9 (amount of fatty-acid ester). Support for amended claims 17 and 23 can be found in original claim 20 (fatty-acid ester is jojoba oil) and at page 7, lines 1-8 (temperature).

Summary of Rejections

The Examiner rejected claims 1-32 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicant regards as the invention. Applicant respectfully traverses this rejection.

The Examiner rejected claims 2, 21, and 29 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicant regards as the invention. Applicant respectfully traverses this rejection.

The Examiner rejected claims 10-12, 14, and 23 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicant regards as the invention. Applicant respectfully traverses this rejection.

The Examiner rejected claims 17-25 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicant regards as the invention. Applicant respectfully traverses this rejection.

The Examiner rejected claims 1, 2, 4-18, and 20-31 under 35 U.S.C. § 102(b) as anticipated by WO 96/22182 or U.S. Patent No. 5,306,788 issued to Uchida et al. or U.S. Patent No. 5,334,670 issued to Uchida et al. Applicant respectfully traverses this rejection.

The Examiner rejected claims 3, 19, and 32 under 35 U.S.C. § 103(a) as being unpatentable over WO 96/22182 or U.S. Patent No. 5,306,788 issued to Uchida et al. or U.S. Patent No. 5,334,670 issued to Uchida et al., each further in view of U.S. Patent No. 5,525,681 issued to Barron et al. Applicant respectfully traverses this rejection.

Rejections under 35 U.S.C. § 112

The Examiner rejected claims 1-32 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicant regards as the invention. More particularly, the Examiner states that it is unclear what quantity of blisters or fatty-acid esters can be present and still satisfy the “substantially free” and “substantially fewer” language. The claims as amended should render the rejection to “substantially fewer” language moot. To the extent the Examiner maintains the remainder of this rejection for the claims as amended, Applicant respectfully traverses this rejection.

One of ordinary skill in the art having read Applicant’s specification would have no problem understanding what is meant by “substantially free of blisters.” As described in the Background of the Invention, polyurea polymers that are molded into, for example, a RIM part such as automobile fascia or automobile body panels can show surface defects in the form of blistering when the molded polymer is exposed to moisture and then exposed to a high temperature such as a temperature greater than 350°F. The problem solved by the invention is to improve blister resistance of a polyurea polymer, particularly an automobile body part.

With this knowledge in mind, one of ordinary skill in the art would have no difficulty in ascertaining the scope of “substantially free of blisters.” The person of ordinary skill would recognize that a molded polyurea polymer or molded automobile

body part would be substantially free of blisters if it had no blisters or trace blistering defects such that the polymer or automobile body part could still be used for its intended application. At the same time, the person of ordinary skill would recognize that any trace blistering defects would be less than for a molded polymer or automobile body part prepared from a mixture that is substantially free of jojoba oil.

One of ordinary skill in the art would also easily understand the scope of an amount of jojoba oil effective for providing blister resistance. For example, the person of ordinary skill will easily understand the scope of "substantially free of blisters," and the specification describes how to select an effective amount of a fatty-acid ester (page 7, lines 1-8 and page 7, line 22 to page 8, line 9). Thus, the claimed invention is definite and particularly points out and distinctly claims the subject matter that Applicant regards as the invention.

The Examiner rejected claims 2, 21, and 29 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicant regards as the invention. More particularly, the Examiner stated that it is unclear how a polyurea is produced when the isocyanate-reactive material is a polyol. To the extent that this rejection is maintained for the claims as amended, Applicant respectfully traverses this rejection.

One of ordinary skill in the art having read Applicant's specification would understand the meaning of the term polyurea polymer. The specification states at page 12, lines 17-19 that the terms "polyurea polymer" and "polyurea-polymer formulation" are intended to include both polyurea and polyurethane polymers as well as a combination of a polyurea and polyurethane polymers and their corresponding formulations. Thus, the claims as amended are definite and particularly point out and distinctly claim the subject matter that Applicant regards as the invention.

The Examiner rejected claims 10-12, 14, and 23 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicant regards as the invention. More particularly, the Examiner stated that it should be clarified that the recited temperatures and times

refer to the exposure proviso of the claims rather than to the actual method of producing the polyurea. This rejection should be rendered moot for the claims as amended.

The Examiner rejected claims 17-35 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter that Applicant regards as the invention. More particularly, the Examiner states that it is unclear that the claim language is to allow for adding the fatty-acid ester to a preformed or existing polyurea polymer. The rejection should be rendered moot by the claims as amended.

The Examiner also rejected use of the term e-coat process. Applicant respectfully traverses this rejection. This term is known to one of skill in the art, and Applicant has included the article *ELPO-Capable Polyurea RRIM Advancements for Automotive Body Panels* (Society of Automotive Engineers Inc., no. 980987, 1998) as an example of the knowledge of one of ordinary skill in the art. The person of ordinary skill would have no problem understanding the meaning and scope of the term "e-coat process."

Rejection under 35 U.S.C. § 102(b) - WO 96/22182

The Examiner rejected claims 1, 2, 4-18, and 20-31 under 35 U.S.C. § 102(b) as anticipated by WO 96/22182. To the extent that this rejection is maintained for new claims 17-18, 21-23, and 33-45, Applicant respectfully traverses this rejection.

The claimed invention is directed to a method of improving the blister resistance of a molded polyurea polymer (claim 17), a blister-resistant molded automobile body part (claim 36), and a method of making a blister-resistant molded automobile body part (claim 41). Independent claims 36 and 41 will be addressed first and then independent claim 17 will be addressed.

A blister-resistant molded automobile body part according to the invention is prepared by (1) admixing a polyisocyanate, an isocyanate-reactive material, and a fatty-acid ester to form a polyurea-polymer mixture and (2) molding the polyurea-

polymer mixture using reaction injection molding. The fatty-acid ester is jojoba oil, and the polyurea-polymer mixture contains the fatty-acid ester in an amount of no more than about 5.0 weight percent based on the weight of the mixture excluding the weight of the polyisocyanate, and this amount is effective to provide blister resistance to the molded automobile body part such that when the molded automobile body part is exposed to moisture and a temperature of at least about 390°F, the molded automobile body part is substantially free of blisters.

In contrast, WO 96/22182 is directed to an internal-mold-release composition that includes at least one carboxylic acid metal salt, at least one compatibilizer, and jojoba oil (Abstract). WO 96/22182 discloses that jojoba oil is used in an amount of from 1% to 40%, preferably from 10% to 30%, and most preferably from 10% to 20% based on the weight of the internal-mold-release composition (page 5, lines 13-17).

Applicant has discovered a composition with unexpected properties when the fatty-acid ester jojoba oil is selected in an amount of no more than about 5.0 weight percent with this amount being effective for providing blister resistance to a molded automobile body part. Moreover, this amount is clearly outside of the preferred (10% to 30%) and most preferred (10% to 20%) ranges of WO 96/22182.

Thus, the composition and process of WO 96/22182 do not disclose the claimed invention of independent claims 36 and 41, and the claimed invention is novel over WO 96/22182.

Turning to claim 17, the claimed invention is directed to a method of improving blister resistance of a molded polyurea polymer. A method of improving a molded polyurea polymer's blister resistance includes (1) adding an effective amount of a fatty-acid ester to a polyurea-polymer formulation, which includes a polyisocyanate and an isocyanate-reactive material, to prepare a mixture and (2) molding that mixture to prepare a molded polyurea polymer. The fatty-acid ester is jojoba oil, and the molded polyurea polymer is substantially free of blisters and has improved blister resistance, as compared to a molded polyurea-polymer that is substantially free of jojoba oil, when exposed to moisture and exposed to a

temperature of at least about 390°F for at least 20 minutes but no longer than 60 minutes.

WO 96/22182 does not disclose a method of improving a molded polyurea polymer's blister resistance. Instead, WO 96/22182 is directed to improving mold-release properties of polyurethane and polyurea products. Thus, the claimed invention is novel over WO 96/22182.

The claimed invention is also nonobvious over WO 96/22182. As Applicant already stated, Applicant has discovered a composition with unexpected properties when the fatty-acid ester jojoba oil is selected in an amount of no more than about 5.0 weight percent with this amount being effective for providing blister resistance to a molded automobile body part. This amount is clearly outside of the preferred (10% to 30%) and most preferred (10% to 20%) ranges of WO 96/22182. Moreover, WO 96/22182 does not teach or suggest that blister resistance of a molded polyurea polymer could be improved by adding jojoba oil.

WO 96/22182 also does not teach that a molded automobile body part or a method of making a molded automobile body part by including jojoba oil in an amount of no more than about 5.0 weight percent and an amount effective for providing blister resistance to the molded automobile body part would even be desirable or successful. Instead, WO 96/22182 teaches an amount of jojoba oil of 10% to 20% to improve mold release. Thus, the claimed invention is nonobvious over WO 96/22182. Applicant respectfully requests favorable reconsideration of all claims.

Rejection under 35 U.S.C. § 102(b) — U.S. Patent Nos. 5,306,788 and 5,334,670

The Examiner rejected claims 1, 2, 4-18, and 20-31 under 35 U.S.C. § 102(b) as anticipated by U.S. Patent Nos. 5,306,788 and 5,334,670, each issued to Uchida et al. To the extent that this rejection is maintained for new claims 17-18, 21-23, and 33-45, Applicant respectfully traverses this rejection. Both U.S. Patents will be addressed together here and referred to as *Uchida et al.* The citations refer to column and page numbers for U.S. Patent No. 5,306,788 unless indicated to the contrary.

Uchida et al. disclose nonfoamed elastomers such as polyurethane and polyurea that are molded by RIM (column 1, lines 15-18 and lines 40-45). The reaction mixture for the elastomers contains an organic polyisocyanate, a polyol, and an internal release agent (column 3, lines 18-40). The internal release agent contains a member selected from the group consisting of a polyester condensate of a saturated fatty acid having a hydroxy group produced by transesterification, a polyester condensate of an unsaturated fatty acid having a hydroxy group produced by transesterification, and a polyester condensate having an amino and/or imino group at the end of the molecule derived from the above-mentioned polyester condensates (column 3, lines 32-40).

The claimed invention is as described above and is directed to improving the blister resistance of a molded polyurea polymer (claim 17), a blister-resistant molded automobile body part (claim 36), and a method of making a blister-resistant molded automobile body part (claim 41). Claims 36 and 41 include jojoba oil in an amount effective for providing blister resistance to a molded automobile body part, and claim 17 includes jojoba oil to improve a molded polyurea polymer's blister resistance.

Jojoba oil is a monoester that is a mixture of long chained unbranched liquid wax esters that result from the esterification of linear monoethylene fatty acids and an linear monoethylene fatty alcohols (see definition of jojoba oil in *The Merck Index*, 12th Ed., p. 897 (1996)) (copy enclosed).

In contrast, *Uchida et al.* disclose polyester condensates and do not disclose jojoba oil. The polyester condensates of *Uchida et al.* are chemically different from jojoba oil by, for example, being branched and including hydroxyl groups, and these chemical differences result in properties that differ from jojoba oil. Because *Uchida et al.* do not disclose jojoba oil, the claimed invention is novel over *Uchida et al.*

The claimed invention is also nonobvious over *Uchida et al.* *Uchida et al.* do not teach or suggest the claimed invention. More specifically, *Uchida et al.* do not teach or suggest adding jojoba oil to a polyurea polymer to improve a molded

polyurea polymer's blister resistance or including jojoba oil in an amount effective for providing blister resistance to a molded automobile body part. Instead, *Uchida et al.* teach an elastomer that includes an internal release agent that is a polyester condensate of a saturated or an unsaturated fatty acid having a hydroxy group produced by transesterification or a molecular end-aminated or iminated polyester condensate to provide an elastomer with a good release property and a good coating property (Abstract of '670 Patent).

Moreover, *Uchida et al.* do not teach or suggest that a blister-resistant molded automobile body part, method of making a blister-resistant molded automobile body part, or method of improving the blister resistance of a polyurea polymer according to the invention would even be desirable or successful. Applicant has discovered a composition with unexpected properties when jojoba oil is added in a amount of no more than about 5.0 weight percent with this amount being effective for providing blister resistance to a molded automobile body part. Moreover, Applicant unexpectedly found that blister resistance of a molded polyurea polymer can be improved by adding jojoba oil. Thus, the claimed invention is nonobvious over *Uchida et al.* Applicant respectfully requests favorable reconsideration of the claims.

Rejection under 35 U.S.C. § 103(a) — WO 96/22182 or *Uchida et al.* ('670 or '788) in view of *Barron et al.* (U.S. Patent No. 5,525,681)

The Examiner rejected claims 3, 19, and 32 under 35 U.S.C. § 103(a) as being unpatentable over WO 96/22182 or *Uchida et al.*, each further in view of *Barron et al.* More particularly, the Examiner states that the addition of polyepoxide to polyurea compositions suitable for use in RIM methods was known at the time of the claimed invention as an effective means for decreasing the formation of blisters resulting from exposure to moisture and elevated temperatures. To the extent the Examiner maintains this rejection for the claims as amended, Applicant respectfully traverses this rejection.

The claimed invention, WO 96/22182, and *Uchida et al.* have already been described above. The Examiner states that it would have been obvious to incorporate

polyepoxides into the compositions of WO 96/22182 or *Uchida et al.* for the function of decreasing blistering within polyureas.

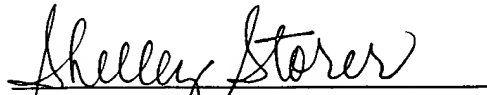
Barron et al. disclose polyurea polymers prepared from formulations including a polyisocyanate, a polyamine, and a polyepoxide that have good heat stability and good physical properties in the substantial absence of uretidine diones and isocyanurates (Abstract). *Barron et al.* further disclose that the polyurea polymers can withstand higher temperatures than conventional polyurea polymers without blistering (Abstract).

As already described above, WO 96/22182 and *Uchida et al.* do not disclose the claimed invention and *Barron et al.* do not supplement the deficiencies of WO 96/22182 or *Uchida et al.* That is, *Barron et al.* do not disclose and certainly do not teach or suggest including jojoba oil to improve a molded polyurea polymer's blister resistance or including jojoba oil in an amount effective for providing blister resistance for a molded automobile body part. Moreover, *Barron et al.* do not teach that a composition or process of the claimed invention would even be desirable or successful. Thus, WO 96/22182 in combination with *Barron et al.* and *Uchida et al.* in combination with *Barron et al.* do not render the claimed invention obvious. Accordingly, Applicant respectfully requests favorable reconsideration of the claims.

CONCLUSION

Applicant believes the above Amendments and Remarks should place this Application in condition for allowance. Applicant respectfully requests favorable reconsideration of all claims and allowance of this Application.

Respectfully submitted,


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Enclosures

VERSION WITH MARKINGS TO SHOW CHANGES MADE
UNDER 37 C.F.R. § 1.121

WHAT IS CLAIMED IS:

1-16. (Cancelled)

17. (Once Amended) A method of improving a molded polyurea polymer's blister resistance, said method comprising:

(A) adding an effective amount of a fatty-acid ester to a [polyurea polymer formulation comprising a] polyisocyanate and an isocyanate-reactive material to prepare a polyurea-polymer mixture, said fatty-acid ester being jojoba oil; and

(B) molding said mixture to prepare a molded polyurea polymer, wherein said molded mixture is substantially free of blisters and has improved blister resistance, [develops substantially fewer blisters] as compared to a molded mixture that is substantially free of jojoba oil [a fatty-acid ester], when exposed to moisture and a temperature of at least about [350]390°F ([177]199°C), said molded polyurea polymer being exposed to said temperature for at least 20 minutes and no longer than 60 minutes.

20. (Cancelled)

23. (Once Amended) The method of Claim 17, wherein said molded mixture is substantially free of blisters and has improved blister resistance, [polyurea polymer is] as compared to a molded mixture that is substantially free of jojoba oil, when exposed to a temperature of at least about 400[375]°F ([190]204°C).

26-32. (Cancelled)

33. (New) The method of Claim 17, wherein said molded polyurea polymer is an automobile body part.

34. (New) The method of Claim 33, wherein said automobile body part is automobile

fascia or automobile body panels.

35. (New) The method of Claim 17, wherein said fatty-acid ester is added in an amount of no more than about 5.0 weight percent based on the weight of said mixture excluding the weight of said polyisocyanate.
36. (New) A blister-resistant molded automobile body part prepared by a method comprising:
- (A) admixing a polyisocyanate, an isocyanate-reactive material, and a fatty-acid ester to form a polyurea-polymer mixture, said fatty-acid ester being jojoba oil; and
 - (B) molding said mixture using reaction injection molding to form a molded automobile body part,
- wherein said mixture contains said fatty-acid ester in an amount of no more than about 5.0 weight percent based on the weight of said mixture excluding the weight of said polyisocyanate, said amount being effective for providing blister resistance to said molded automobile body part such that when said molded automobile body part is exposed to moisture and a temperature of at least about 390°F (199°C), said molded automobile body part is substantially free of blisters.
37. (New) The molded automobile body part of Claim 36, wherein said isocyanate-reactive material is at least one of a polyamine and a polyol.
38. (New) The molded automobile body part of Claim 36, wherein at least one additive is further admixed with said polyurea-polymer mixture, said additive being at least one of a chain extender, a catalyst, a surfactant, and an internal-mold-release agent.
39. (New) The molded automobile body part of Claim 36, wherein a polyepoxide is further admixed with said polyurea-polymer mixture.
40. (New) The molded automobile body part of Claim 36, wherein said fatty-acid ester is present in an amount of at least about 0.5 weight percent but no more than

about 3.0 weight percent based on the weight of said mixture excluding the weight of said polyisocyanate.

41. (New) A method of making a blister-resistant molded automobile body part, said method comprising:

(A) admixing a polyisocyanate, an isocyanate-reactive material, and a fatty-acid ester to form a polyurea-polymer mixture, said fatty-acid ester being jojoba oil; and

(B) molding said mixture using reaction injection molding to form a molded automobile body part,

wherein said mixture contains said fatty-acid ester in an amount of no more than about 5.0 weight percent based on the weight of said mixture excluding the weight of said polyisocyanate, said amount being effective for providing blister resistance to said molded automobile body part such that when said molded automobile body part is exposed to moisture and a temperature of at least about 390°F (199°C), said molded automobile body part is substantially free of blisters.

42. (New) The method of Claim 41, wherein said isocyanate-reactive material is at least one of a polyamine and a polyol.

43. (New) The method of Claim 41 further comprising admixing at least one additive with said polyurea-polymer mixture, said additive being at least one of a chain extender, a catalyst, a surfactant, and an internal-mold-release agent.

44. (New) The method of claim 41 further comprising admixing a polyepoxide with said polyurea-polymer mixture.

45. (New) The method of Claim 41, wherein said fatty-acid ester is present in an amount of at least about 0.5 weight percent but no more than about 3.0 weight percent based on the weight of said mixture excluding the weight of said polyisocyanate.